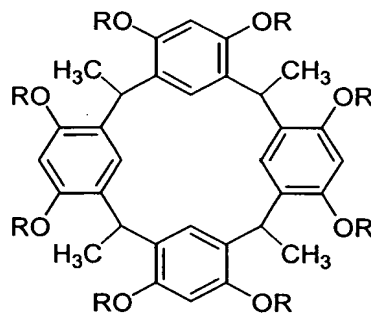


# CLAIMS

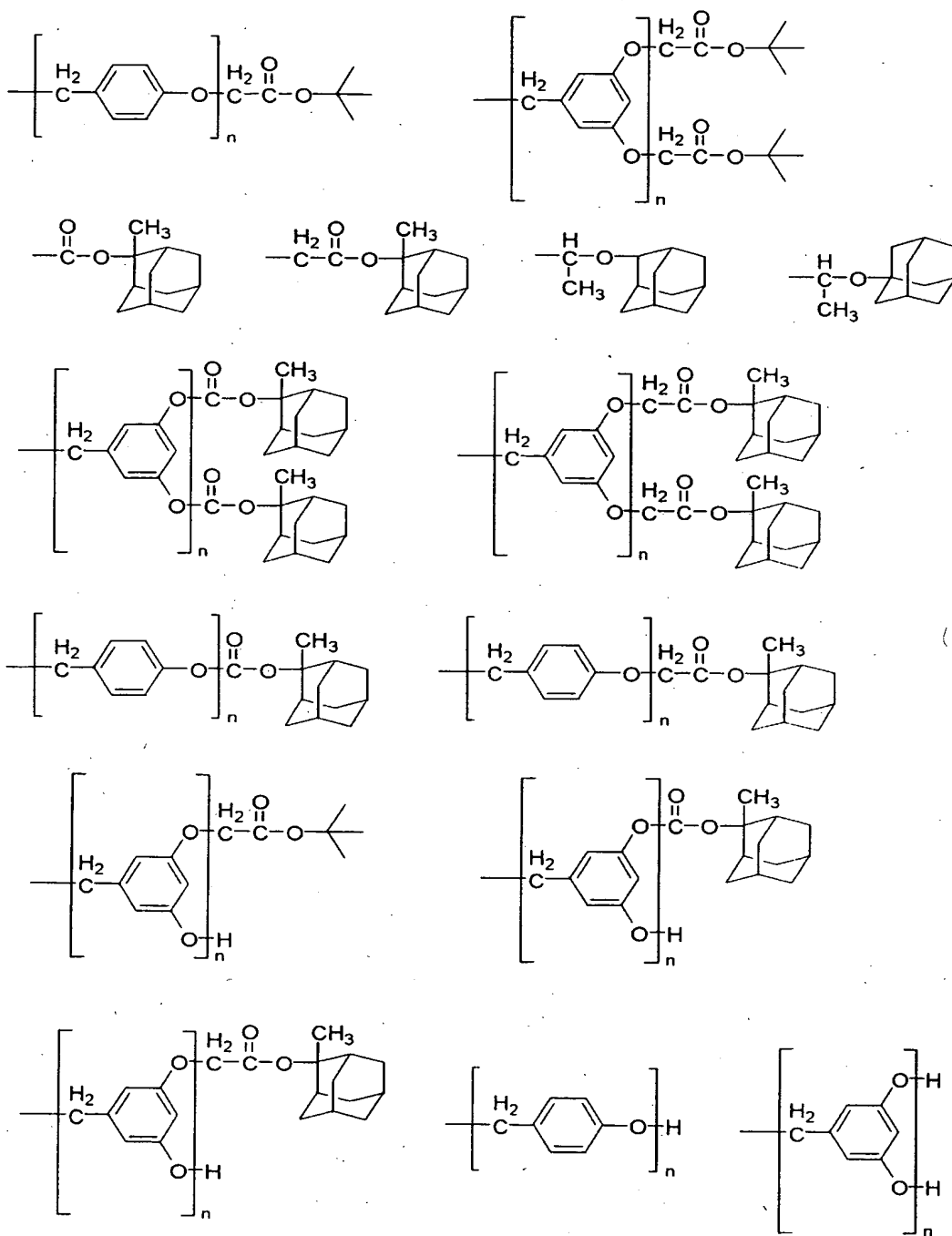
1. A calixresorcinarene compound shown by the following formula (1),

5



(1)

wherein R individually represents a hydrogen atom, a  
1-tetrahydropyranyl group, a 1-tetrahydrofuranyl group, or one  
10 or more organic groups selected from the group consisting of  
the organic groups shown by the following formulas,



wherein n individually represents an integer of 1 to 50,

provided that a compound in which R is selected only from  
 5 a hydrogen atom, a 1-tetrahydropyranyl group, and a

1-tetrahydrofuranyl group is excluded.

2. A purification method of a calixresorcinarene compound comprising washing the compound according to claim 1 with an  
5 acidic aqueous solution and processing the washed compound with an ion-exchange resin.

3. A photoresist base material for extreme ultraviolet radiation and/or an electron beam comprising the  
10 calixresorcinarene compound shown by the above formula (1).

4. A photoresist composition for extreme ultraviolet radiation and/or an electron beam comprising the photoresist base material according to claim 3 and a solvent.

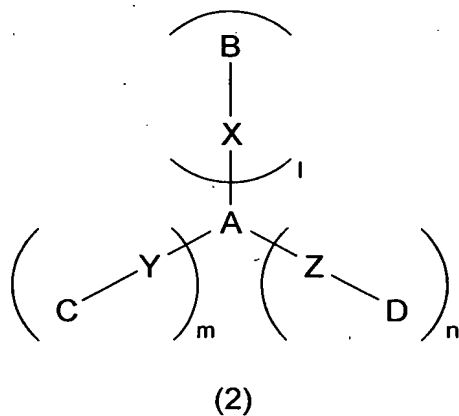
15

5. The photoresist composition according to claim 4, further comprising a photoacid generator.

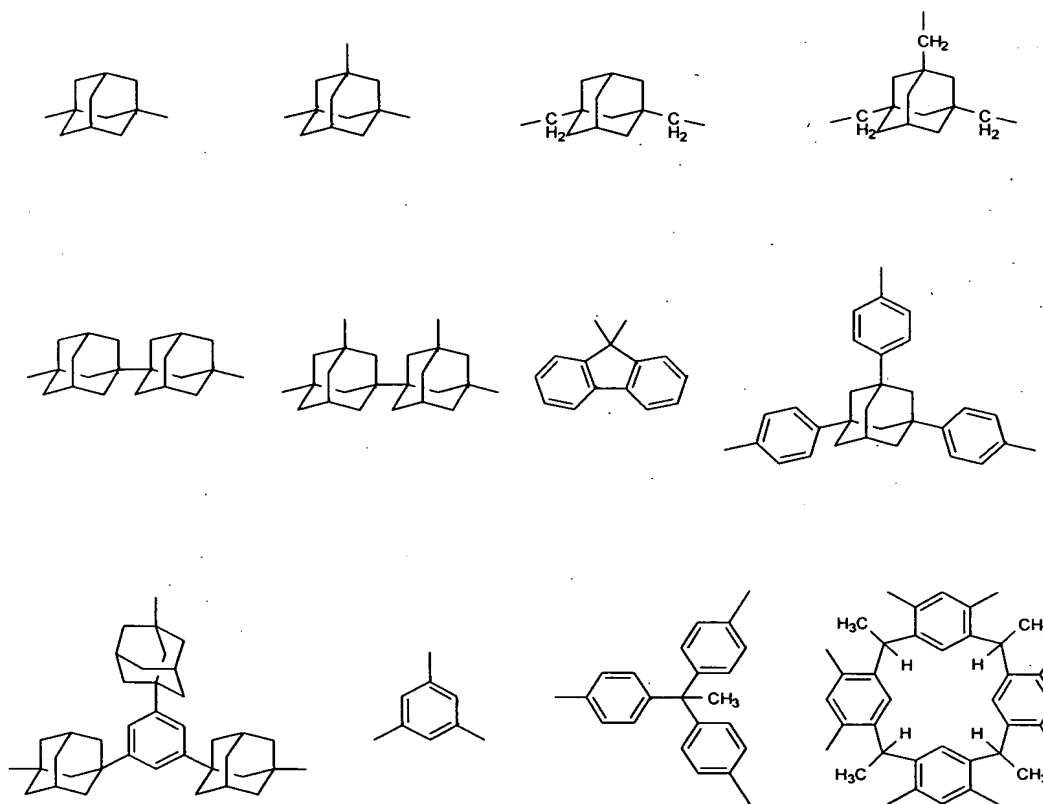
6. The photoresist composition according to claim 4 or 5,  
20 further comprising a basic organic compound as a quenching agent.

7. A photoresist composition comprising a photoresist base material that is an extreme ultraviolet radiation-reactive  
25 organic compound shown by the following formula (2), obtained by washing with an acidic aqueous solution and processing with an ion-exchange resin, a photoacid generator or a photobase

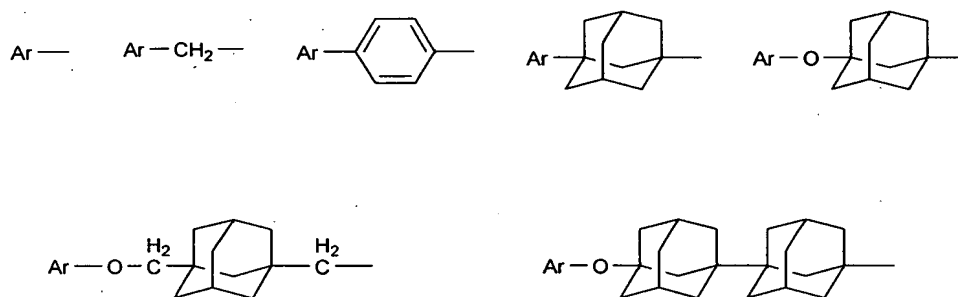
generator, and a quenching agent,



5 wherein A is an organic group represented by one of the following formulas,



B, C, and D are individually a group reactive with extreme ultraviolet radiation, a group reactive with an effect of a chromophore active to extreme ultraviolet radiation, or an  
 5 organic group of any of the following formulas,



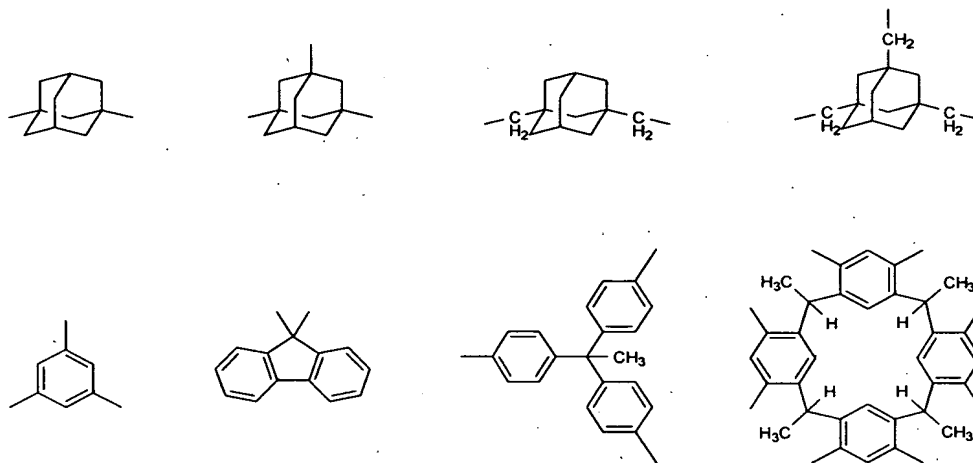
wherein Ar is a phenyl group or a naphthyl group substituted  
 10 with RO- and/or ROCO-, wherein R, RO-, and ROCO- are groups reactive with extreme ultraviolet radiation or groups reactive with an effect of a chromophore active to extreme ultraviolet radiation,

X, Y, and Z individually represent a single bond or an ether  
 15 bond, and  $1 + m + n = 2, 3, 4, \text{ or } 8$ .

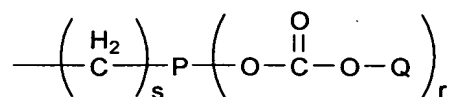
8. The photoresist composition according to claim 7, wherein the extreme ultraviolet-radiation reactive organic compound is in an amorphous state at room temperature and the average  
 20 diameter of the molecule is 2 nm or less.

9. The photoresist composition according to claim 7, wherein A is an organic group represented by any of the following

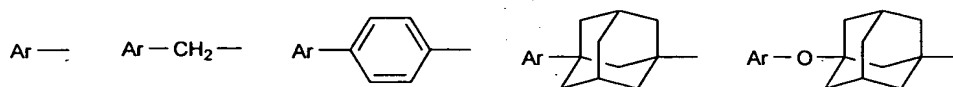
formulas,



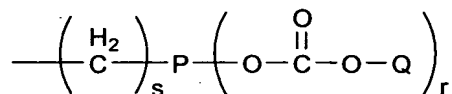
5        B, C, and D are individually a hydrogen atom, a tert-butyl group, tert-butyloxycarbonylmethyl group, tert-butyloxycarbonyl group, 1-tetrahydropyranyl group, 1-tetrahydrofuryl group, 1-ethoxyethyl group, 1-phenoxyethyl group, an organic group shown by the following  
10 formula,



wherein P is an aromatic group having 6 to 20 carbon atoms with  
15 a valence of (r + 1), Q represents an organic group having 4 to 30 carbon atoms, r is an integer of 1 to 10, and s is an integer of 0 to 10, or an organic group represented by any of the following formulas,



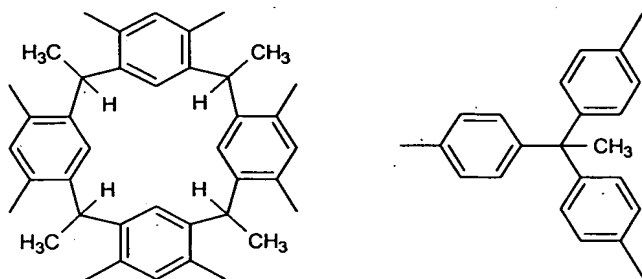
wherein Ar is a phenyl group or a naphthyl group substituted with RO- and/or ROCO-, wherein R is a hydrogen atom, a tert-butyl group, tert-butyloxycarbonylmethyl group, tert-butyloxycarbonyl group, 1-tetrahydropyranyl group, 1-tetrahydrofuryl group, 1-ethoxyethyl group, 1-phenoxyethyl group, or an organic group shown by the following formula,



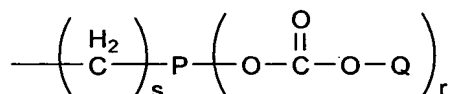
wherein P is an aromatic group having 6 to 20 carbon atoms with a valence of (r + 1), Q represents an organic group having 4 to 30 carbon atoms, r is an integer of 1 to 10, and s is an integer of 0 to 10, and

X, Y, and Z individually represent a single bond or an ether bond.

10. The photoresist composition according to claim 7, wherein A is any one of the organic groups represented by the following formulas,



B, C, and D are individually a hydrogen atom, a tert-butyl group, tert-butyloxycarbonylmethyl group,  
 5 tert-butyloxycarbonyl group, 1-tetrahydropyranyl group,  
 1-tetrahydrofuranlyl group, 1-ethoxyethyl group,  
 1-phenoxyethyl group, or an organic group shown by the following  
 formula,



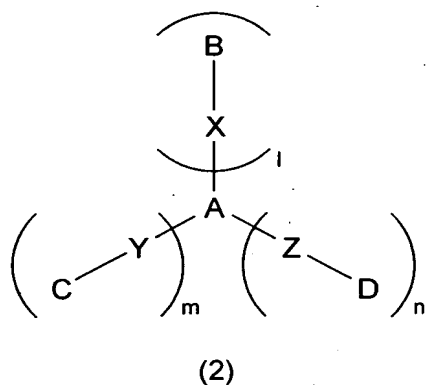
10

wherein P is an aromatic group having 6 to 20 carbon atoms with  
 a valence of  $(r + 1)$ , Q represents an organic group having 4  
 to 30 carbon atoms, r is an integer of 1 to 10, and s is an integer  
 15 of 0 to 10, and

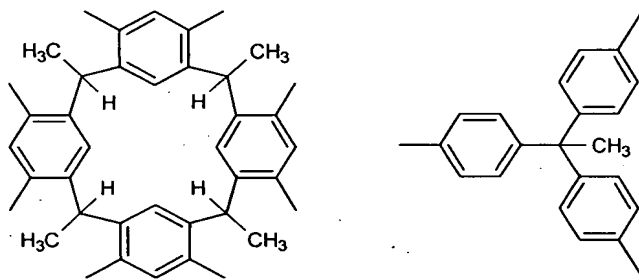
X, Y, and Z are ether bonds.

11. A photoresist composition comprising a photoresist base  
 material that is a radiation-reactive organic compound shown  
 20 by the following formula (2), obtained by washing with an acidic  
 aqueous solution and processing with an ion-exchange resin, a  
 photoacid generator or a photobase generator, and a quenching

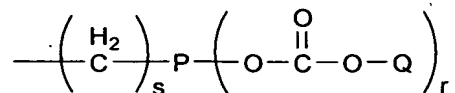
agent,



wherein A is an organic group represented by one of the following  
 5 formulas,



B, C, and D are individually a tert-butyloxycarbonylmethyl  
 10 group, tert-butyloxycarbonyl group, or an organic group shown  
 by the following formula,



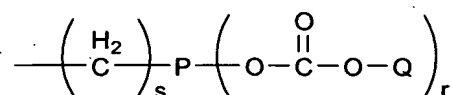
15 wherein P is an aromatic group having 6 to 20 carbon atoms with  
 a valence of (r + 1), Q represents an organic group having 4

to 30 carbon atoms, r is an integer of 1 to 10, and s is an integer of 0 to 10, and

X, Y, and Z individually represent a single bond or an ether bond, and  $1 + m + n = 3$  or  $8$ .

5

12. The photoresist composition according to claim 11, wherein the organic group shown by the following formula,



10

is a 4-(tert-butoxycarbonyloxy)benzyl group or a 3,5-di(tert-butoxycarbonyloxy)benzyl group.

13. The photoresist composition according to claim 11, wherein  
15 the radiation is extreme ultraviolet radiation or an electron beam.

14. The photoresist composition according to claim 7 or 11,  
wherein at least one of B, C, and D is a hydrogen atom and X,  
20 Y, and Z are ether bonds.

15. The photoresist composition according to claim 7 or 11,  
wherein the basic impurity content of the photoresist base  
material is not more than 10 ppm.

25

16. A microfabrication method by lithography using the

photoresist composition according to claim 4, 7, or 11.

17. A semiconductor device prepared using the photoresist composition according to claim 4, 7, or 11.